

Test & Evaluation in the Midst of Conflict: Confronting the New War

Conference Objective

**How Test and Evaluation can help support
our military forces during wartime?**

Session IV Focus


Modeling and Simulation in Support of War

Held in Savannah, GA, 25 February – 1 March 2002

Panel

- Dr. Anne L. Hillegas, Vice President, Advanced Systems & Concept Development, Hicks & Associates
- Colonel Kenneth L. Pieper, USA, Deputy Director, Defense Modeling and Simulation Office (DMSO)
- Dr. Paul H. Deitz, Technical Director, US Army Materiel Systems Analysis Activity

Agenda: Session IV

	Introduction	5 Mins
	Presentation by Dr. Hillegas	20 Mins
	Presentation by COL Pieper	20 Mins
	Presentation by Dr. Deitz	20 Mins
	Q&A/Summary	Remaining Time

Agenda: Session IV

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Presentation by COL Pieper	20 Mins
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Q&A/Summary	Remaining Time
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Biography for Dr. Anne L. Hillegas

Education:

- BS - Industrial Management & Mathematics, Carnegie-Mellon University
- MS - Engineering, George Washington University
- D.Sc. - Engineering, George Washington University

Experience:

- Acting Deputy Director for Test, Defense Nuclear Agency
- Director of Development Planning and the Lethality Program Manager in BMDO
- Served as Congressional Fellow for both the House & Senate
- Currently Vice President for Advanced Systems & Concept Development at Hicks & Associates

Hillegas Charts

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Q&A/Summary	Remaining Time
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Biography for COL Kenneth L. Pieper

Education:

- BS – US Military Academy, West Point, 1979
- MS – Operations Analysis, US Naval Postgraduate School, 1989
- US Army War College, 1999

Experience:

- Field Artillery Officer, Battery through Corps Level
- Land Forces Analyst in J8, JCS, the Pentagon
- Senior Military Fellow at the National Defense University
- Currently Deputy Director, Defense Modeling and Simulation Office

Pieper Charts

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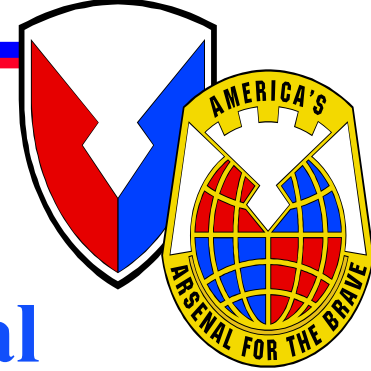
Biography for Dr. Paul H. Deitz

Education:

- BA - Physics, Gettysburg College, 1964
- MS - Engineering, Major-Electrical, University of Washington, 1971
- Ph. D. - Electrical Engineering, University of Washington, 1973

Experience:

- 38 years of government employment
- Chief, Vulnerability Methodology Branch, US Army Ballistic Research Laboratory
- Chief, Vulnerability/Lethality Division, Army Research Laboratory
- Currently Technical Director, US Army Materiel Systems Analysis Activity (AMSAA),



Test & Evaluation and Modeling & Simulation as a Dual

Dr. Paul H. Deitz
Technical Director
US Army Materiel Systems Analysis Activity
phd@amsaa.army.mil; 410-278-6598

27 February 2002

Presentation to the Test & Evaluation Conference, Test & Evaluation in the Midst of Conflict: Confronting the New War; Session IV, Modeling & Simulation in Support of War, held in Savannah, GA, 25 February – 1 March 2002.



AMSAA

AMC -- Army READINESS Command . . . Supporting Every Soldier Every Day

Conference/Session Foci

Conference

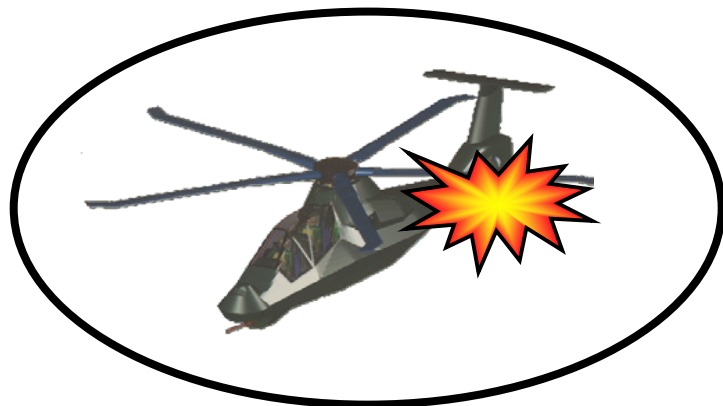
**How Test and Evaluation can help support
our military forces during wartime?**

Session IV

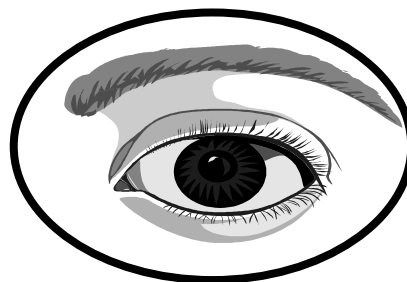
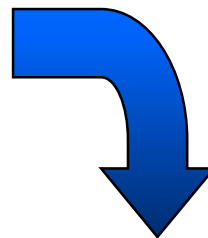
Modeling and Simulation in Support of War

Two Key Points

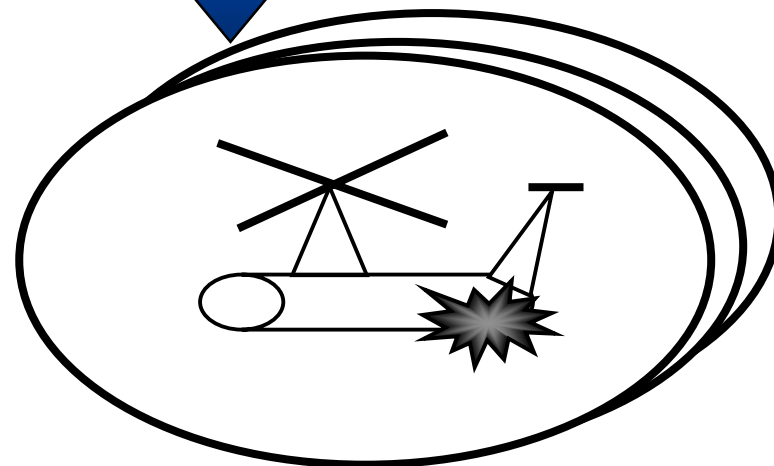
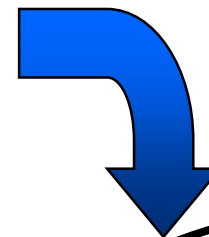
- **T&E and M&S as a Dual**
- **Parsing M&S in support of War into two pieces**



**Actual Physical
Systems and Events
(*i.e.*, System State
Changes)**

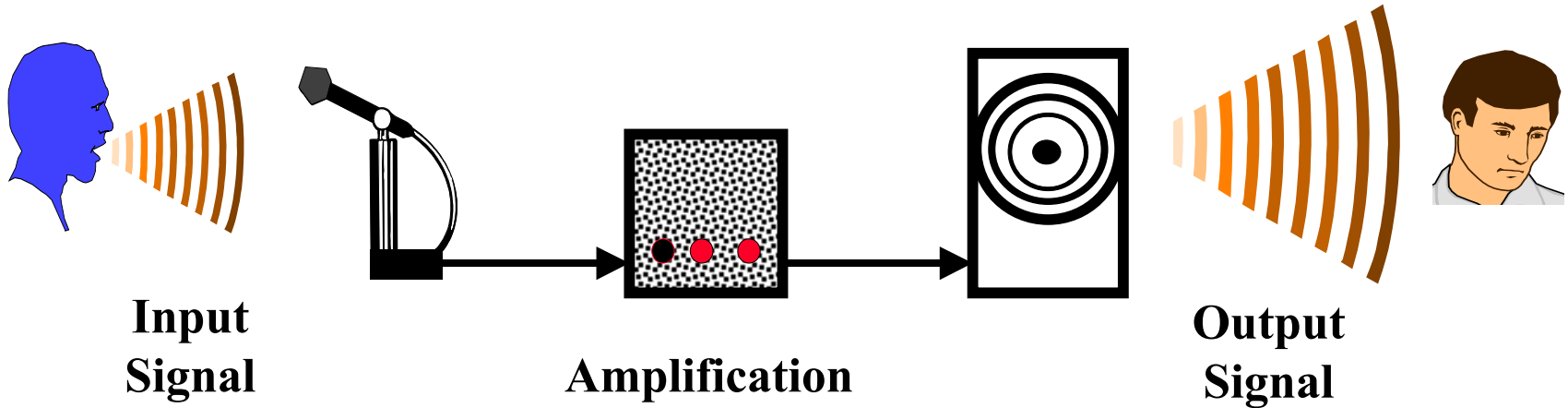


**Seen Through
the *Eyes* of an
Observer or
Modeler**

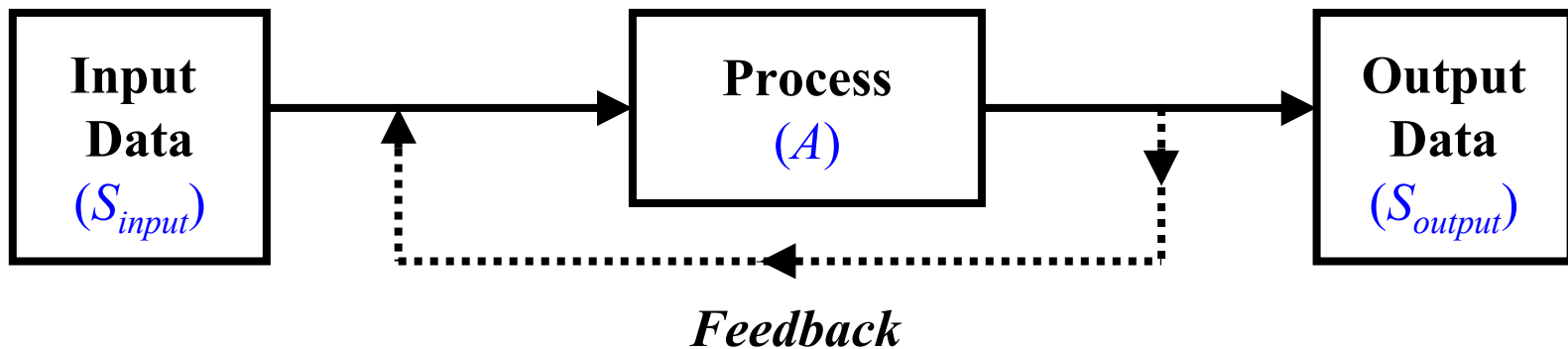


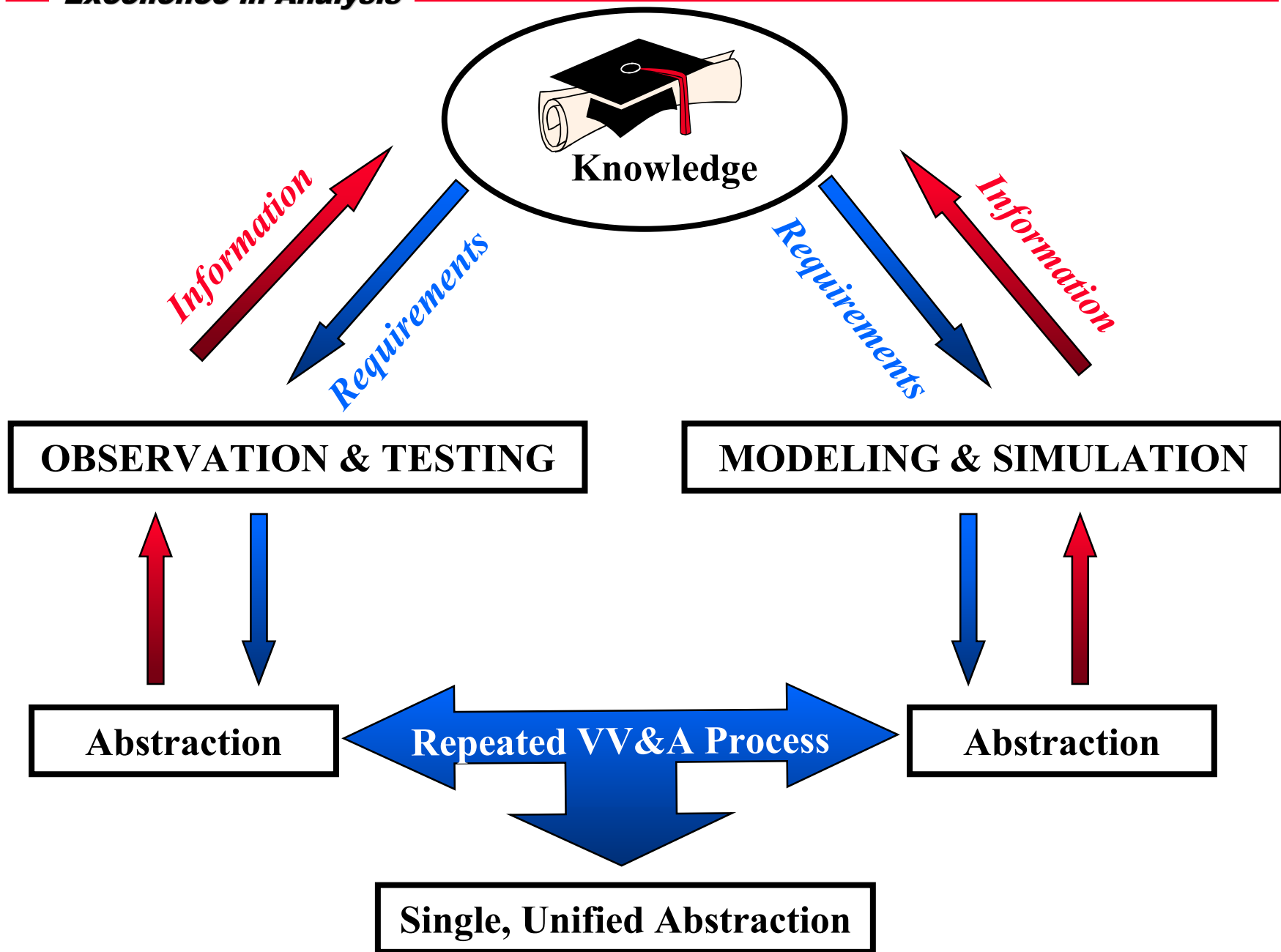
**Leads to a *Mental
Picture* or Abstraction**

PHYSICAL EVENT

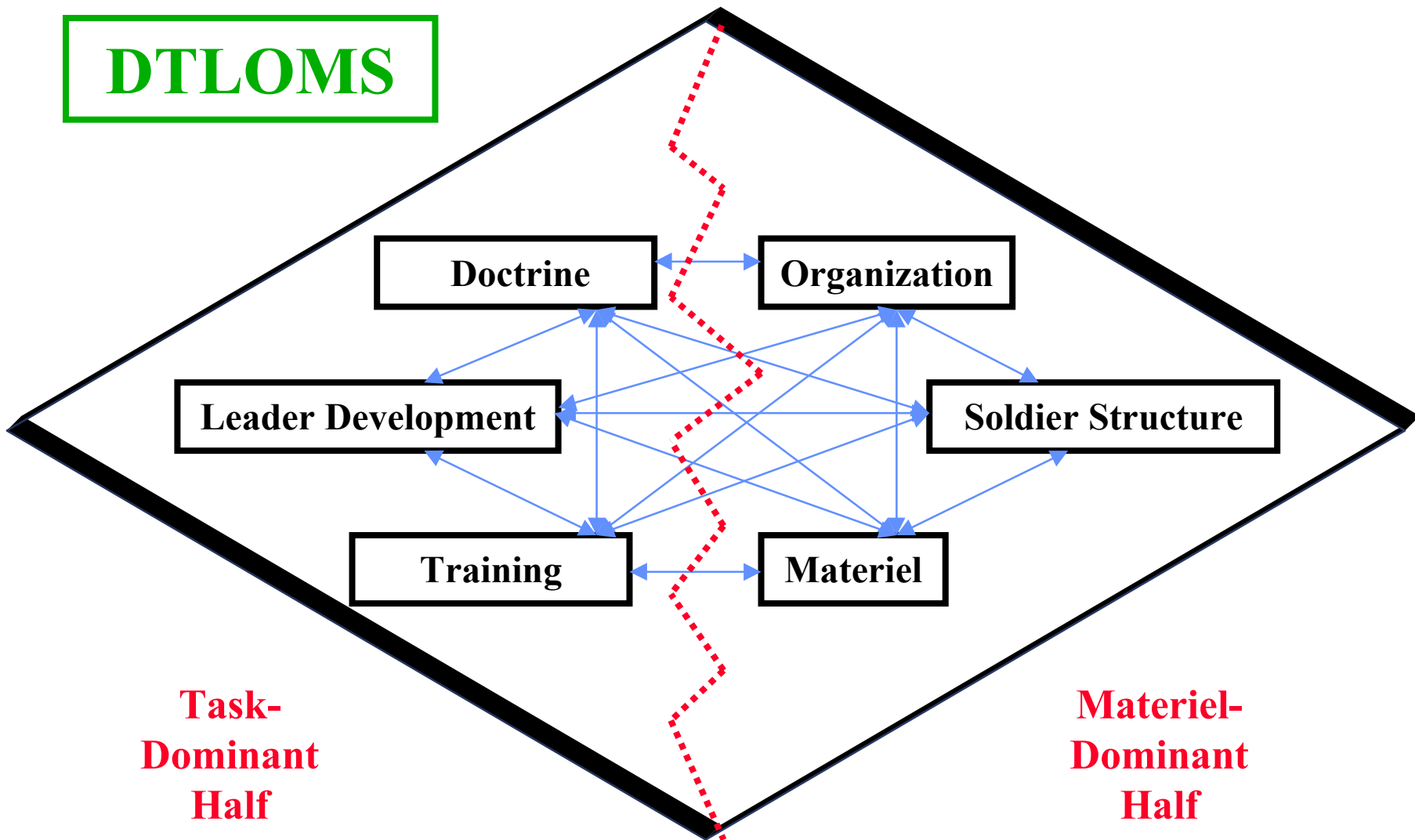


M&S ABSTRACTION ($S_{output} = S_{input} \times A$)

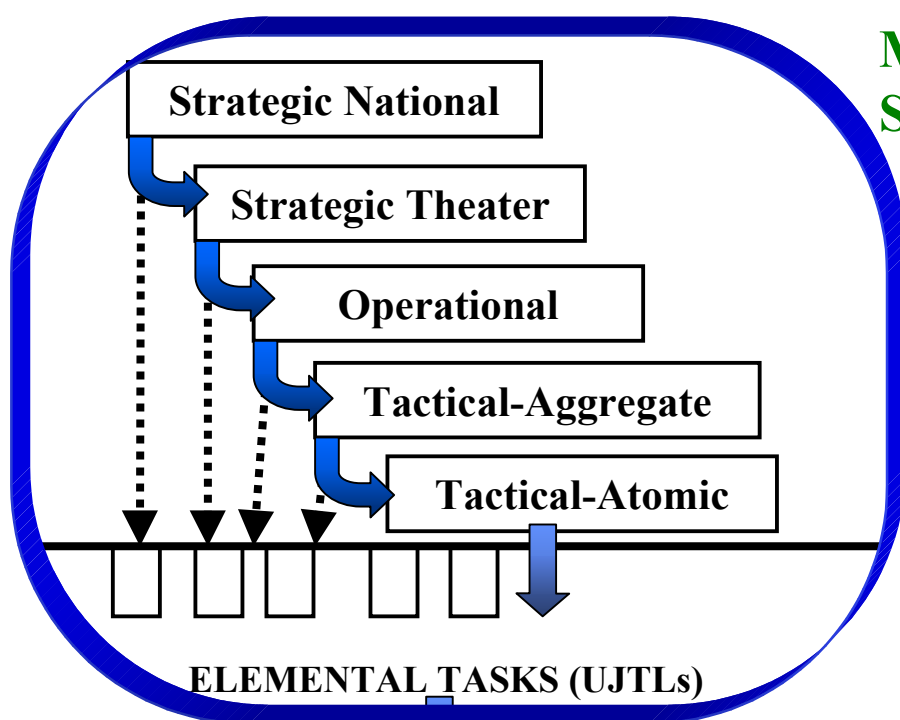




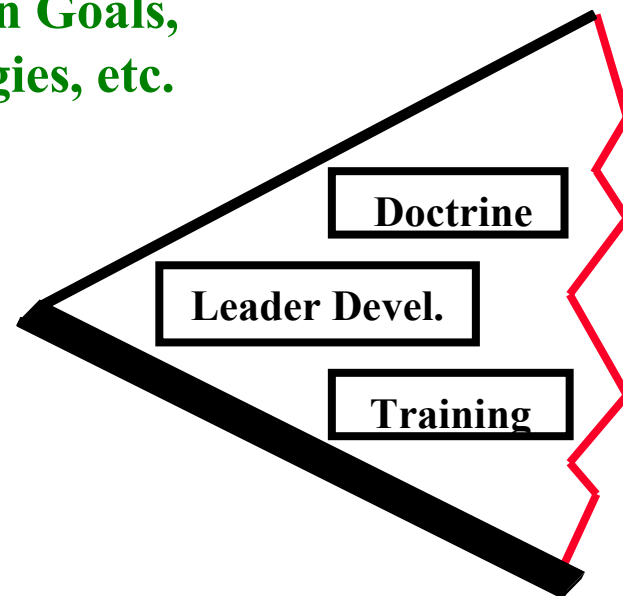
DTLOMS



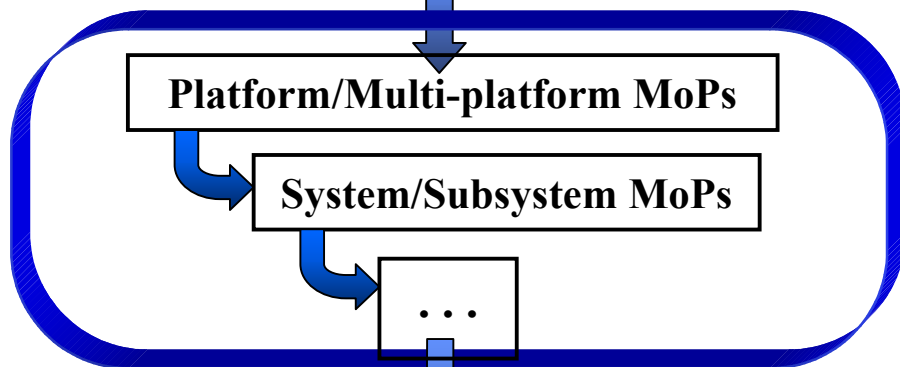
Level 4



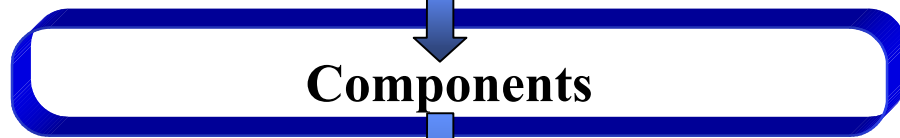
Mission Goals,
Strategies, etc.



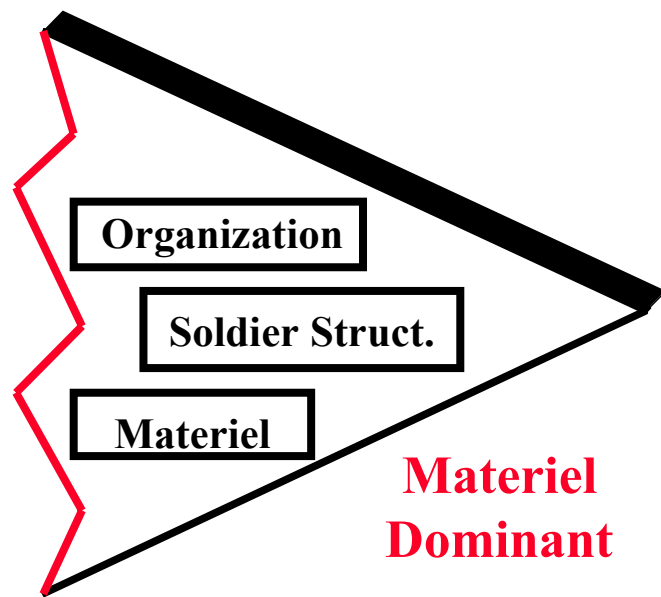
Level 3



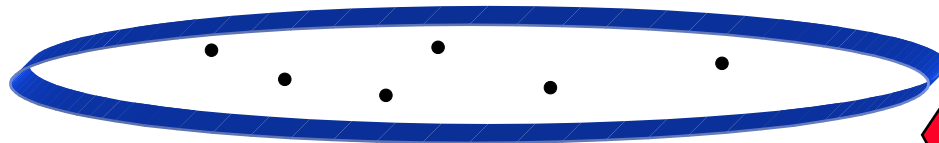
Level 2



Level 1



Level 4



Mission Utility

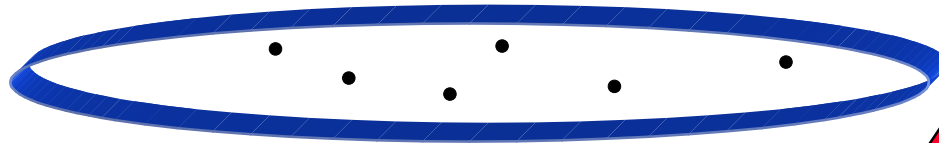


**O_{3,4}
Operator**

Operational Testing



Level 3



Functional Capabilities

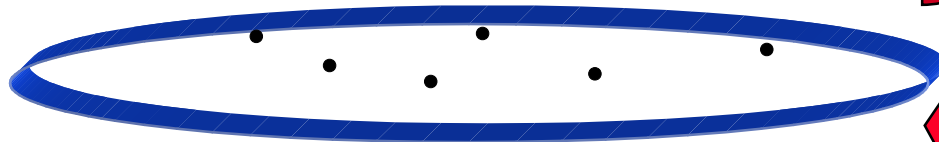


**O_{2,3}
Operator**

Developmental Testing



Level 2



Component Conditions

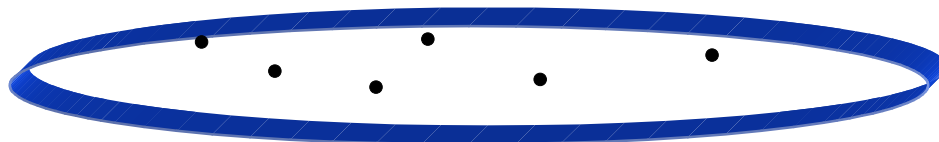


**O_{1,2}
Operator**

Developmental Testing



Level 1



Interaction Conditions

Summary Points

- *T&E* and *M&S* strategies should be formulated as a Dual using corresponding abstractions; else, no basis for VV&A.
- *M&S in Support of War* can be parsed into two distinct pieces:
 - ◆ One part is dynamically task oriented
 - ◆ The other part is dynamically materiel oriented
 - ◆ A major challenge remains to link the two pieces in detail, so as to account for the effect of materiel on tasks, and *vice versa*

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